

*Sub A4
Cont'd*

Cp is a substituted [or unsubstituted] cyclopentadienyl or a substituted or unsubstituted cycloalkadienyl group other than cyclopentadienyl or a related cycloalkadienyl cogener,

Each Q is independently an anionic leaving group,

J is a [group] Group 15, 16 or 17 atom,

a is the oxidation state of D,

D is a [group] Group 4, 5 or 6 metal, provided however that when Cp is a mono-cyclic unsubstituted cyclopentadienyl group, M is not titanium, and

Y is a heteroatom, a substituted heteroatom or a C_1 to C_{100} hydrocarbyl group [which] that may optionally contain one or more heteroatom(s) [heteroatoms].

Claim 19 (Once Amended) The composition of claim 18 wherein Cp is a substituted cyclopentadienyl group.

REMARKS

Reconsideration of the above-identified application in view of the above amendments and remarks following is respectfully requested.

Claims 1 to 3, 5 to 20 and 22 to 32 are before the Examiner. Claims 1, 2, 9 and 16 to 19 have been amended.

This claimed invention is directed toward novel and unobvious catalyst system that manifest high catalytic activity.

The Examiner has required election of species with regard to the symbols J and Y. By telephone conversation on August 25, 2000 with the Examiner, attorney James Sher provisionally elected with traverse to prosecute the invention wherein J is defined as a Group 16 atom and Y is defined as a C_1 to C_{100} hydrocarbyl group. All the claims before the Examiner are readable on the election requirement. By this communication the election affirmed.

The Examiner has objected to the specification disclosure because it is asserted that Y as defined as "a substituted Group 13 - 17 heteroatom group" does not make sense. The objection is respectfully traversed. In response, Applicant states that the clause refers to where Y may be a heteroatom or a substituted heteroatom.

Claims 1 to 32 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection is respectfully traversed.

Specifically, the Examiner asserts that in each of claims 1, 13, 30 and 18, J seems to define a divalent group, and Y a monovalent group. In response, Applicant states J has been elected to be a Group 16 atom and Y elected to be a C1 to C100 hydrocarbyl group and the Examiner has withdrawn from further consideration the rest of J and Y species. Applicant therefore respectfully requests that the need for correction be held in abeyance pending indication of allowable subject matter. *OK*

Specifically the Examiner asserts that in each of claims 9 and 26, Y seems to be a monovalent group. The Examiner assert that when Y is defined as Groups 13 to 16 heteroatom, there will be extra bond(s) on Y after bonding with J. For reason similar to those in the paragraph supra, Applicant respectfully requests that the need for correction be held in abeyance pending indication of allowable subject matter.

Specifically, the Examiner states that in claims 5 and 22, the terms "indene" and "fluorene" lack antecedent basis. In response, Applicant states that basis for these terms for claim 5 may be found in claim 3, from which claim 5 depends, and that basis for these terms in claim 22 may be found in claim 20, from which claim 22 depends. *| NO*

Claims 1 - 32 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over Tsutsui et al. (hereinafter "Tsutsui"). The rejection is respectfully traversed. Specifically, the Examiner has relied on the Col. 4 line 20 carried over to Col. 5, line 16.

In response, Applicant states that Tsutsui generic disclosure literally encompasses thousands of compounds, if not more. It is respectfully submitted that there is nothing within the Tsutsui disclosure that would lead one of ordinary skill in the art to applicant's claimed compounds. It is submitted therefore that the Examiner has not met the burden of establishing that Tsutsui would have suggested that the species recited in the instant claims are obvious. Furthermore when one of ordinary skill in the art considers the express teachings of Tsutsui one would not come close to the compounds recited in applicants claims. The compounds listed from Col. 5, line 63 carried over to Col. 6, line 43 are all bis(cyclopentadienyl) compounds. Applicant's claims do not read on bis(cyclopentadienyl) compounds. The only instances wherein R² of Tsutsui is designated as an OR group the compound is a bis(cyclopentadienyl) compound. In fact, the teaching in Tsutsui do not include how to make mono Cp compounds which are recited in applicant's claims although there is a teaching of how to make the bis(cyclopentadienyl) compounds. It is therefore respectfully submitted that the Examiner has not provided the necessary motivation to go from a bis(cyclopentadienyl) to the mono(cyclopentadienyl) catalyst compounds as recited in the instant claims. It is respectfully submitted that the claims are patentable over Tsutsui and that the rejection should be withdrawn.

Claims to 32 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over Campbell, Jr. (hereinafter "Campbell"). This rejection is respectfully traversed.

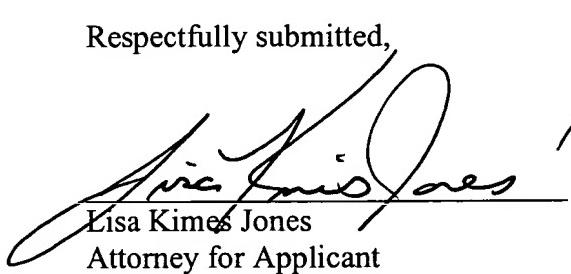
It is respectfully submitted that it is well known in the polymerization arts that styrene and alpha-olefins such as propylene polymerize by completely different mechanisms. It is also well know in the art that catalyst systems for the polymerization of olefins most often are not useful for the polymerization of styrene and vs.. It is therefore respectfully submitted that the mere finding that alpha-olefins and styrene have vinyl groups does not provide the motivation of using or even trying a catalyst in an alpha- olefin process when found useful in a vinyl aromatic polymerization process. It is particularly noteworthy that Campbell's catalysts are useful for obtaining syndiotactic polymers, a property that would not at all be of interest in the polymerization of ethylene that is demonstrated in applicants examples. It is therefore respectfully submitted that the Examiner has not provided any evidence of obviousness other than conclusory statements.

In any event, it is respectfully submitted that the claims as now amended do not read on any compound recited in Campbell. It is further submitted that the Examples in the instant application provide evidence of unobviousness over Campbell. In Table 3 of applicant's application it is unequivocally demonstrated that the catalysts comprising the substituted cyclopentadienyl groups manifest activities that are unexpectedly greater than the catalysts comprising the unsubstituted cyclopentadienyl groups. For example 1b and 1c show an activity that is twice that of 1a; 2b shows an activity more than twice that of 2a. Similar results are found in the number 3 compounds.

In view of an absence of evidence relating to vinyl olefins and vinyl aromatic catalysts being interchangeable, and in view of the demonstration of unexpected results it is respectfully submitted that the rejection over Campbell should be withdrawn.

In view of the above amendments and remarks it is respectfully submitted that the claims in this case are in condition for allowance. If it would be of assistance to resolve any outstanding issues in the present application, the Examiner is invited to contact the undersigned.

Respectfully submitted,



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Date

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